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Blood stream infections: Changing trends in etiology and susceptibility pattern

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Background: Blood stream infections are an important cause of mortality and morbidity. Illness associated with blood stream infection ranges from self-limiting infections to life-threatening sepsis that require rapid and aggressive antimicrobial treatment. So, knowledge of local pathogens and susceptibility patterns is essential to start prompt and appropriate empirical therapy and also to formulate and update antibiotic policy. Increasing rates of antimicrobial resistance, changing patterns of antimicrobial usage, and the wide use of indwelling catheters may change the epidemiology and outcome of bloodstream infection.

Methods & Materials: The data from blood cultures received over a period of 4 years from 2011-2014 were retrospectively analysed by using WHONET 5.6 software. Common demographic parameters of patients were noted. The change in trends of etiology and susceptibility pattern of pathogens causing BSIs at a tertiary care hospital was studied

Results: A total of 12553 blood cultures were processed with 1651(13.1%) showing positive cultures. Maximum blood cultures were received from medical wards followed by paediatric ICU. Gram negative bacteria (GNB mainly Enterobacteriaceae) were predominant cause of bacteremia in all 4years but pseudomonas and acinetobacter were emerging as newer pathogens.Predominant isolate in 2011 was *E.coli (44%)* and in 2014 was *Acinetobacter spp (88%)* . We have observed increase in multidrug resistant bacteria over 4 years. The prevalence of ESBLs has increased from 61.6%(2011) to 66%(2014) and that of Carbapenamase producers from 13.6% to 25%.MRSA has jumped from 50% to 60% and Amp C producers were detected at a rate ranging between 69-71%.The most effective antimicrobials against GNB were carbapenems and aminoglycosides and against gram positive cocci were Vancomycin and Linezolid

Conclusion: Gram negative bacteria were predominant cause of bacteremia . Drug resistance in bacteria is increasing over the years which need effective implementation of the antibiotic policy formulated according to local susceptibility pattern.

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Emergence of multidrug resistant and non-vaccine serotypes of streptococcus pneumoniae in a tertiary care hospital, Southern India

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Background: *Streptococcus pneumoniae* is an important human pathogen causing invasive and non invasive infections associated with high rates of morbidity and mortality. Antimicrobial therapy and vaccines have been used to treat and control these infections. Against this background, it becomes necessary to monitor antimicrobial susceptibility and the circulating serotypes of *S. pneumoniae* to achieve optimum control.

Methods & Materials: All the clinical isolates of *S. pneumoniae* confirmed by lytA-targeted PCR collected in our laboratory from December 2014 to August 2015 were tested for their susceptibility to various antibiotics by disc diffusion following standard procedures (CLSI, 2014). MIC values of penicillin were determined by E-strips (Biomerieux, France). Serotyping was carried out by latex agglutination using grouped antisera (Statens Serum Institut, Poland) and confirmed by PCR.

Results: Thirty eight isolates were obtained from various clinical specimens including blood, CSF, sputum and pus. The following were the documented resistance rates to various antibiotics –erythromycin- 24%, clindamycin-13% of which 20% showed inducible resistance, tetracycline - 26%, levofloxacin - 11% and cotrimoxazole-45%. Two isolates, one each from CSF and sputum were resistant to penicillin with MIC values of 1.5 μg/ml and 16 μg/ml respectively. No resistance was observed to vancomycin, ceftriaxone and linezolid. Multi drug resistance was seen in 21% of isolates with a majority showing resistance to macrolides, tetracyclines and cotrimoxazole. The penicillin resistant strain from sputum of an adult with bronchiectasis was of 47A/F serotype, which is not covered under PCV13 or PPV23. Three other non- vaccine serotypes, 33D (from lens tissue) 31 and 19C (both from sputum of adults with lower respiratory tract infections) were also identified.

Conclusion: Emergence of both MDR and non - vaccine serotypes of *S.pneumoniae* is of grave concern and should prompt greater efforts at restricted antimicrobial use, particularly for upper respiratory infections as well as studies to enhance knowledge on circulating serotypes to improve vaccine efficacy.

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